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L2 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:576899 CAPLUS  
DOCUMENT NUMBER: 131:185368  
ENTRY DATE: Entered STN: 14 Sep 1999  
TITLE: Method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane  
INVENTOR(S): Costantini, Michel; Fache, Eric; LeConte, Philippe  
PATENT ASSIGNEE(S): Rhodia Fiber and Resin Intermediates, Fr.  
SOURCE: PCT Int. Appl., 20 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: French  
INT. PATENT CLASSIF.:  
MAIN: C07C051-44  
SECONDARY: C07C051-487; C07C051-43; C07C051-42; C07C055-14; C07C051-31  
CLASSIFICATION: 35-2 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 23, 48  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9944980	A1	19990910	WO 1999-FR420	19990224
W: BR, BY, CA, CN, CZ, ID, JP, KR, PL, RO, RU, SG, SK, UA, US, VN				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,				

	PT, SE			
FR 2775685	A1	19990910	FR 1998-2928	19980305
FR 2775685	B1	20001229		
CA 2322701	AA	19990910	CA 1999-2322701	19990224
BR 9908395	A	20001031	BR 1999-8395	19990224
EP 1060157	A1	20001220	EP 1999-937924	19990224
EP 1060157	B1	20030625		
R: BE, DE, ES, FR, GB, IT, NL				
JP 2002505314	T2	20020219	JP 2000-534526	19990224
RU 2214392	C2	20031020	RU 2000-125108	19990224
ES 2196841	T3	20031216	ES 1999-937924	19990224
TW 506966	B	20021021	TW 1999-88103171	19990302
US 6787669	B1	20040907	US 2000-623414	20001108 <--
PRIORITY APPLN. INFO.:			FR 1998-2928	A 19980305
			WO 1999-FR420	W 19990224

PATENT CLASSIFICATION CODES:

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 9944980	ICM	C07C051-44
	ICS	C07C051-487; C07C051-43; C07C051-42; C07C055-14; C07C051-31
	IPCI	C07C0051-44 [ICM,6]; C07C0051-487 [ICS,6]; C07C0051-43 [ICS,6]; C07C0051-42 [ICS,6]; C07C0055-14 [ICS,6]; C07C0055-00 [ICS,6,C*]; C07C0051-31 [ICS,6]; C07C0051-16 [ICS,6,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16 [I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
	ECLA	C07C051/42+55/14; C07C051/43+55/14; C07C051/44+55/14; C07C051/487+55/14
FR 2775685	IPCI	C07C0051-31 [ICM,6]; C07C0051-16 [ICM,6,C*]; C07C0055-14 [ICS,6]; C07C0055-00 [ICS,6,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16 [I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
	ECLA	C07C051/42+55/14; C07C051/43+55/14; C07C051/44+55/14; C07C051/487+55/14
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BR 9908395	IPCI	C07C0051-44 [ICM,7]; C07C0051-487 [ICS,7]; C07C0051-43 [ICS,7]; C07C0051-42 [ICS,7]; C07C0055-14 [ICS,7]; C07C0055-00 [ICS,7,C*]; C07C0051-31 [ICS,7]; C07C0051-16 [ICS,7,C*]
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EP 1060157	IPCI	C07C0051-44 [ICM,6]; C07C0051-487 [ICS,6]; C07C0051-43 [ICS,6]; C07C0051-42 [ICS,6]; C07C0055-14 [ICS,6]; C07C0055-00 [ICS,6,C*]; C07C0051-31 [ICS,6]; C07C0051-16 [ICS,6,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16

		[I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
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ES 2196841	IPCI	C07C0051-44 [ICM,7]; C07C0051-487 [ICS,7]; C07C0051-43 [ICS,7]; C07C0051-42 [ICS,7]; C07C0055-14 [ICS,7]; C07C0055-00 [ICS,7,C*]; C07C0051-31 [ICS,7]; C07C0051-16 [ICS,7,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16 [I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
TW 506966	IPCI	C07C0051-44 [ICM,7]; C07C0051-487 [ICS,7]; C07C0051-43 [ICS,7]; C07C0051-42 [ICS,7,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16 [I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
US 6787669	IPCI	C07C0051-31 [ICM,7]; C07C0051-16 [ICM,7,C*]
	IPCR	C07B0061-00 [I,C*]; C07B0061-00 [I,A]; C07C0051-16 [I,C*]; C07C0051-31 [I,A]; C07C0051-42 [I,C*]; C07C0051-42 [I,A]; C07C0051-43 [I,A]; C07C0051-44 [I,A]; C07C0051-487 [I,A]; C07C0055-00 [I,C*]; C07C0055-14 [I,A]
	NCL	562/543.000
	ECLA	C07C051/42+55/14; C07C051/43+55/14; C07C051/44+55/14; C07C051/487+55/14

ABSTRACT:

The treatment of reaction mixts. derived from an oxidation reaction of cyclohexane into adipic acid is described along with a method for the separation of the different constituents of the mixts. and the purification of the adipic acid by extractive and distillative means.

SUPPL. TERM: adipic acid manuf purifn; distn adipic acid purifn; extn  
adipic acid purifn; cyclohexane oxidn adipic acid manuf  
purifn

INDEX TERM: Carboxylic acids, uses

ROLE: NUU (Other use, unclassified); USES (Uses)

(esters, extraction solvents; method for separating and

purifying

adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: Alicyclic compounds

Aromatic hydrocarbons, uses

Hydrocarbons, uses

ROLE: NUU (Other use, unclassified); USES (Uses)

(extraction solvents; method for separating and purifying

adipic

acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: Crystallization

Distillation

Extraction

Hydrogenation

Recrystallization  
 (in a method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: Oxidation  
 (liquid-phase; in a method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: Hydroperoxides  
 ROLE: RCT (Reactant); RACT (Reactant or reagent)  
 (method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane using)

INDEX TERM: Electrodialysis  
 (separating and purifying adipic acid via)

INDEX TERM: Purification  
 (separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: 108-93-0P, Cyclohexanol, preparation 108-94-1P, Cyclohexanone, preparation  
 ROLE: BYP (Byproduct); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
 (method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-47-3, Chrome, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses  
 ROLE: CAT (Catalyst use); USES (Uses)  
 (method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: 124-04-9P, Hexanedioic acid, preparation  
 ROLE: IMF (Industrial manufacture); PUR (Purification or recovery); PREP (Preparation)  
 (method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: 110-82-7, Cyclohexane, reactions 7697-37-2, Nitric acid, reactions 10028-15-6, Ozone, reactions  
 ROLE: RCT (Reactant); RACT (Reactant or reagent)  
 (method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

INDEX TERM: 64-19-7, Acetic acid, uses 7732-18-5, Water, uses  
 ROLE: NUU (Other use, unclassified); USES (Uses)  
 (solvent; method for separating and purifying adipic acid which is prepared by the oxidation of cyclohexane)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD.

REFERENCE(S): (1) BASF AG; FR 2353513 A 1977 CAPLUS  
 (2) BASF AG; FR 2390415 A 1978 CAPLUS  
 (3) Bayer AG; DE 4428977 A 1996 CAPLUS  
 (4) Constantini, M; WO 9603365 A 1996 CAPLUS  
 (5) Dougherty, E; US 3933930 A 1976 CAPLUS  
 (6) Horbez, D; WO 9736673 A 1997 CAPLUS  
 (7) I G Farbenindustrie AG; DE 764488 C 1953  
 (8) Mitsubishi Petrochemical Co; FR 2092524 A 1972 CAPLUS  
 (9) Rhodia Fiber and Resin Interme; FR 2757155 A 1998 CAPLUS  
 (10) The Chemstrand Corporation; FR 1266886 A 1961

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☐ 1. Document ID: US 6787669 B1

L8: Entry 1 of 1

File: USPT

Sep 7, 2004

US-PAT-NO: 6787669

DOCUMENT-IDENTIFIER: US 6787669 B1

TITLE: Method for separating and purifying adipic acid

DATE-ISSUED: September 7, 2004

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Costantini; Michel	Lyons			FR
Fache; Eric	Caluire et Cutre			FR
Leconte; Philippe	Meyzieu			FR

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE	CODE
Rhodia Fiber & Resin	Courbevoie					
Intermediates	Cedex			FR		03

APPL-NO: 09/623414 [PALM]

DATE FILED: November 8, 2000

PARENT-CASE:

This application was filed as a 371 application based on application PCT/FR99/00420 filed Feb. 24, 1999 which claims priority to application FR98/02928 filed Mar. 5, 1998.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
FR	98 02928	March 5, 1998

PCT-DATA:

APPL-NO	DATE-FILED	PUB-NO	PUB-DATE	371-DATE
PCT/FR99/00420	February 24, 1999	WO99/44980	Sep 10, 1999	

INT-CL-ISSUED: [07] C07C 51/31

INT-CL-CURRENT:

TYPE IPC	DATE
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CIPS C07 C 51/43 20060101  
CIPS C07 C 51/44 20060101  
CIPS C07 C 51/487 20060101  
CIPS C07 C 51/42 20060101

US-CL-ISSUED: 562/543  
US-CL-CURRENT: 562/543

FIELD-OF-CLASSIFICATION-SEARCH: 562/543  
See application file for complete search history.

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<u>3933930</u>	January 1976	Dougherty et al.	
<u>5463119</u>	October 1995	Kollar	
<u>5900506</u>	May 1999	Fache et al.	

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	CLASS
764 488	June 1953	DE	
44 28 977	February 1994	DE	
1 266 886	November 1961	FR	
2 092 524	January 1972	FR	
2 353 513	December 1977	FR	
2 390 415	December 1978	FR	
2 757 155	June 1998	FR	
96 03365	February 1996	WO	
97 36673	October 1997	WO	

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Derwent abstract (Acc No 1973-51168U) of JP 81006975B (1981). Enhanced purity adipic acid production.\*  
Derwent abstract (Acc No 1973-31683U) of JP 73016902 (1973). Adipic acid purification--by contact with ozone containing gas and crystallization.\*  
Derwent abstract (Acc. No. 1980-24322C) of JP 55024153 (1980). Recovery of high purity adipic acid.\*  
Derwent abstract (Acc No 1977-86545Y) of BE 855237A (1977). Purification of adipic acid.\*  
Derwent abstract (Acc No 1971-07345S) of JP 71002802B (1971). Adipic acid purification.

ART-UNIT: 1651

PRIMARY-EXAMINER: Gitomer; Ralph



ATTY-AGENT-FIRM: Burns, Doane, Swecker & Mathis, L.L.P.

ABSTRACT:

The present invention relates to the treatment of the reaction mixtures resulting from an oxidation reaction of cyclohexane to adipic acid and more particularly to the separation of the various constituents of the said mixtures and to the purification of the adipic acid.

22 Claims, 0 Drawing figures

Full	Title	Citation	Front	Review	Classification	Date	Reference	Sequences	Attachments	Claims	KMC	Draw De
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Term	Documents
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